

### **REMARKS**

The Office Action dated April 8, 2008 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1, 5, 8, 10, 11, 13, 18 and 20-23 have been amended to more particularly point out and distinctly claim the subject matter of the invention. Claims 24-26 are newly added. No new matter has been added.

The Office Action indicated that claims 17-18 have been allowed and claims 10 and 16 contain allowable subject matter. Applicant again wishes to thank the Examiner for the allowance of these claims. However, claims 1-16 and 19-26 are respectfully submitted for reconsideration.

Claims 1-3, 5-9, 11, 12 and 21-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Usui et al. (JP404242106A) in view of Mack et al. (U.S. Patent No. 6,377,700), Teitelbaum (U.S. Patent No. 5,872,834) and further in view of Picone et al. (U.S. Patent No. 5,293,452). The Office Action took the position that the combination of the above four references teach all of the subject matter recited in the claims. This rejection is respectfully traversed for at least the following reasons.

Claim 1, upon which claims 2-12 are dependent, recites an apparatus that includes at least one camera directed toward a user's face and configured to record at least two still images of a user from at least first and second angles of view, and a processor connected to said at least one camera. The processor is configured to process the still

images obtained by said at least one camera and to generate a 3-dimensional model of the user's face, and to compare the generated model with the stored user profile information to determine whether the user is authorized to access the system, the processor includes an access device configured to grant access to the system when the generated model matches the profile information of one of the authorized users stored in a memory, thereby indicating recognition and authorization of the user, and an updater configured to update the profile information of the one of the authorized users with the generated model after each grant of access by the access device such that the updated profile information comprises an average of the generated model and the previously stored profile information.

Claim 13, upon which claims 14-16 are dependent, recites an apparatus that includes at least one charged coupled camera configured to obtain at least two still images of a user's face from at least two different predetermined angles of view and to obtain at least one still image of the user's face, and a processor. The processor is configured to connect to the at least one charge coupled camera and said light source to generate a 3-dimensional model of the user's face using the at least two still images, and to generate a facial texture bit map of the user's face using the at least one still image, the processor is configured to compare the 3-dimensional model and the facial texture bit map to the stored user profile information contained in a memory and to access the system when the generated 3-dimensional model and facial texture bit map match a user profile stored in the memory.

Claim 17 recites a method that includes obtaining, by a mobile apparatus, at least two 2-dimensional still images of a user from at least two different angles of view, sending the images to a server over a network, generating, by the server, a 3-dimensional model of the user's face from the obtained images, determining, by the server, the user's facial shape using the generated 3-dimensional model, sending the 3-dimensional model and the user's facial shape to the mobile apparatus. The method further includes comparing, at the mobile apparatus, the determined facial shape with profile information stored in memory, the profile information comprising data relating to the facial shape of authorized users, and determining, at the mobile apparatus whether the determined facial shape matches the profile information stored in the memory.

Claim 20 recites an apparatus that includes obtaining means for obtaining at least two still images of a user's face from at least two different predetermined angles of view and to obtain at least one still image of the user's face, and generating means connected to said at least one CCD camera and said light source, for generating a 3-dimensional model of the user's face using the at least two still images, and for generating a facial texture but map of the user's face using the at least one still image, said generating means comparing the 3-dimensional model and the facial texture bit map to the stored user profile information contained in said storing means, and for accessing to the system when the generated 3-dimensional model and facial texture bit map match a user profile stored in said storing means.

Claim 21 recites an apparatus that includes recording means directed toward a user's face and for recording at least two still images of a user from at least first and second angles of view, and processor means connected to said at least one recording means for processing the still images obtained by said at least one recording means. The processing means further performing generating a 3-dimensional model of the user's face, and for comparing the generated model with the stored user profile information for determining whether the user is authorized to access a system, the processing means comprising an access granting means for granting access to the system when the generated model matches the profile information of one of the authorized users stored in the storing means, thereby indicating recognition and authorization of the user. The processing means for including updating means for updating the profile information of the one of the authorized users with the generated model after each granting of access by the access granting means such that the updated profile information comprises an average of the generated model and the previously stored profile information.

Claim 22 recites an apparatus variation of claim 17, and claim 23 recites a means-plus-function variation of claim 17.

As will be discussed below, the combination of Usui, Mack, Teitelbaum and Picone do not teach the subject matter recited in the claims.

As a preliminary matter, Applicant submits that the Office Action has not properly addressed the subject matter of claims 1, 13, 20 and 21. The Office Action has not provided any comments in the Response to Arguments portion of the Office Action

regarding the subject matter previously submitted in amended independent claims 1, 13, 20 and 21. Applicant notes that the Response submitted on December 10, 2007 contained amendments to claims 1, 13, 20 and 21 and specific reasons why Usui, Teitelbaum, Picone, and, in particular, Mack fail to teach those features of the claims. Applicant further notes the Response to Arguments portion of the Office Action attempted to itemize Applicant's arguments by paraphrasing Applicant's individual arguments and then providing an "Examiner's Reply" in response, however, it appears that the Office Action has ignored the argument explicitly stated in the last Response with regard to the lack of teachings in Mack regarding to "generate a 3-dimensional model of the user's face...and a facial texture bit map of the user's face using at least one still image of the user's face", as recited, in part, in claims 1, 13, 20 and 21.

Given the lack of attention to the subject matter of claims 1, 13, 20 and 21, Applicant will again provide detailed reasons as to why the teachings of Usui, Teitelbaum, Picone and Mack are insufficient with respect to claims 1, 13, 20 and 21. Applicant submits that these claims are in condition for allowance and should be properly considered and allowed without further delay for at least the reasons discussed below.

Again, Applicant submits that Usui, Teitelbaum, Picone and Mack fail to teach or suggest,

"a processor to generate a 3-dimensional model of the user's face and to generate a facial texture bit map of the user's face using the at least one still image of the user's face, and to compare the generated model and the facial texture bit map with the stored user profile information to determine whether

the user is authorized to access the system”, as recited, in part, in amended claim 1, and similarly in claims 13, 20 and 21 (emphasis added).

It has already been established that Usui, Teitelbaum and Picone fail to disclose generating a user’s “facial texture bit map”, as recited in the claims. The Office Action again relied on Mack as allegedly curing this deficiency of Usui, Teitelbaum and Picone with respect to claims 1, 13, 20 and 21. Applicant submits that the Office Action’s interpretation of Mack is incorrect.

Mack is directed to capturing stereoscopic images. Mack further describes creating three-dimensional (3-D) models of real objects, where a multitude of images of real objects are taken from different positions to exploit the differences of the object’s projections. See col. 2 lines 40-47 of Mack. The two or more images (stereoscopic images) are processed into 3-D models.

The Office Action incorrectly relied on column 3 of Mack as allegedly disclosing “a processor to generate a 3-dimensional model of the user’s face and to generate a facial texture bit map of the user’s face using the at least one still image of the user’s face”, as recited, in part, in claims 1, 13, 20 and 21. Column 3 of Mack discloses a process which is illustrated in FIGS. 3a-3c of Mack. The process includes generating a 3-D model of a user’s face by capturing images from different angles (see column 3, lines 7-10 of Mack). First the 2-D models of the images (X, Y) are compared and the overlapping regions are expanded to a 3-D model by adding a third (depth) dimension based on points which are

shared by the plurality of images. In other words 2-D models having overlapping 2-D data are combined to estimate a 3-D model one point (X, Y, Z) at a time.

The teachings of Mack are limited to using 2-D images to obtain 3-D models. Claim 1 clearly recites more than simply creating a 3-D model using images, as claim 1 recites, in part, “a processor to generate a 3-dimensional model of the user’s face and to generate a facial texture bit map of the user’s face using the at least one still image of the user’s face”, as recited, in part, in claims 1, 13, 20 and 21 (emphasis added). At best, Mack discloses generating a 3-D model but does not disclose generating a facial texture bit map of a face.

Page 12, paragraph [0020] of the specification of the present application explicitly discloses generating a 3-D model and generating a facial texture bit map based on a picture of the user’s face and comparing the 3-D model and the facial texture bit map with pre-stored user profile information. Paragraph [0019] of the specification describes generating the 3-D model using any suitable well-known surface reconstruction algorithm. Paragraph [0020] provides that the facial texture bit map is generated based on a normal picture as illustrated in FIG. 5 of the present application. As can be clearly understood from the specification, a 3-D model is generated separately from generating a facial texture bit map. Then the 3-D model and the facial texture bit map are both compared to pre-stored user profile information to authenticate the user. Mack is strictly limited to generating a 3-D model of a user’s face and provides no support for generating a facial texture bit map.

A “facial texture bit map” is not taught by any of the above references and is not properly addressed by the Office Action. Therefore, independent claims 1, 13, 20 and 21 are allowable over Usui, Teitelbaum, Picone, and Mack.

In addition, claims 17-18 have been allowed and independent claims 22-24 are respective apparatus, means-plus-function and computer program claim variations of independent claim 17 and should be allowed for the same reasons. By virtue of dependency, claims 2-12, 14-16 and 18-19 should also be allowed. Withdrawal of the rejections of those claims and an allowance of claims 1-26 is respectfully requested.

Claims 4, 13-15 and 19 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Usui, Mack, Teitelbaum, Picone and further in view of Sadovnik (U.S. Patent No. 5,497,430).

Usui, Mack, Teitelbaum and Picone are discussed above. Sadovnik is directed to operating an image recognition system including providing a neural network including a plurality of input neurons. However, Applicant submits that Sadovnik fails to cure the deficiencies discussed above regarding claim 1.

Based at least on the above, Applicant submits that Usui, Mack, Teitelbaum and Picone fail to disclose or suggest all of the features recited in claims 4, 13-15 and 19. Accordingly, withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.



Applicant submits that each of claims 1-26 recites features that are neither disclosed nor suggested in any of the cited references. Accordingly, it is respectfully requested that each of claims 1-26 be allowed and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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Enclosures: Additional Claims Transmittal  
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